AMENDMENTS TO THE CLAIMS

1-26. (Canceled)

27. (New) A method for communication, comprising:

defining a topology of a transparent local area network service (TLS), comprising a system of label-switched tunnels between label-switched routers (LSRs) through a communication network, the TLS having at least first and second endpoints to which first and second user equipment is connected so that the TLS acts as a virtual bridge between the first and second user equipment;

transmitting control frames among the LSRs in the TLS via the label-switched tunnels, each control frame comprising a control traffic label and a bridge protocol data unit (BPDU) in accordance with a spanning tree protocol (STP), the control traffic label indicating to the LSRs that the STP is to be executed by the LSRs without transmission of the BPDU to the user equipment; and

upon receiving the control frames at the LSRs, processing the BPDU, responsively to the control traffic label, so as to remove loops in the topology of the TLS irrespective of the user equipment.

28. (New) The method according to claim 27, wherein the label-switched tunnels comprise multiprotocol label switching (MPLS) tunnels.

29. (New) The method according to claim 27, wherein transmitting the control frames comprises pushing the control traffic label onto the control frames at a sending LSR, the control traffic label containing an agreed-upon value indicating that the control frame belongs to the STP, and wherein processing the BPDU comprises popping the control traffic label off the control frames at a receiving LSR.

30. (New) The method according to claim 27, wherein processing the BPDU comprises setting a transmitting state for each of the label-switched tunnels.

31. (New) The method according to claim 30, wherein for at least one of the label-switched tunnels, the transmitting state is set to a blocking state so as to

prevent frames from being sent across the at least one of the label-switched tunnels, in order to eliminate a loop in the TLS.

32. (New) The method according to claim 27, wherein transmitting the control frames comprises sending the control frames through the label-switched tunnels that are used for carrying user data in the TLS.

33. (New) The method according to claim 27, wherein the TLS is one of a plurality of transparent local-area network services (TLSs) operative in the communication network, and wherein transmitting the control frames comprises inserting information in the control frames that identifies the TLS among the plurality of TLSs, and wherein processing the BPDU comprises eliminating the loops only from the TLS identified by the control frames.

34. (New) The method according to claim 33, wherein inserting the information in the control frames comprises pushing a channel label onto the control frames, in addition to the control traffic label, so as to identify the TLS.

35. (New) The method according to claim 33, wherein inserting the information in the control frames comprises adding the information that identifies the TLS to the control traffic label.

36. (New) A communication device for operation as one of a plurality of label-switched routers (LSRs) in a transparent local area network service (TLS), which includes a system of label-switched tunnels between the label-switched routers (LSRs) through a communication network, the TLS having at least first and second endpoints to which first and second user equipment is connected so that the TLS acts as a virtual bridge between the first and second user equipment, the device comprising:

one or more ports, adapted to send and receive traffic via the label-switched tunnels; and

a traffic processor which is coupled to the one or more ports, and is adapted to transmit control frames to the LSRs in the TLS via the label-switched tunnels, each control frame comprising a control traffic label and a bridge protocol data unit

(BPDU) in accordance with a spanning tree protocol (STP), the control traffic label indicating to the LSRs that the STP is to be executed by the LSRs without transmission of the BPDU to the user equipment, wherein the traffic processor is further adapted, upon receiving the control frames, to process the BPDU, responsively to the control traffic label, so as to remove loops in a topology of the TLS irrespective of the user equipment..

37. (New) The device according to claim 36, wherein the label-switched tunnels comprise multiprotocol label switching (MPLS) tunnels.

38. (New) The device according to claim 36, wherein the traffic processor is adapted to push the control traffic label onto the control frames before transmitting the control frames to the LSRs, the control traffic label containing an agreed-upon value indicating that the control frame belongs to the STP, and is further adapted to pop the control traffic label off the control frames upon receiving the control frames.

39. (New) The device according to claim 36, wherein the traffic processor is adapted to set a transmitting state for each of the label-switched tunnels responsively to the BPDUs.

40. (New) The device according to claim 39, wherein for at least one of the label-switched tunnels, the transmitting state is set to a blocking state so as to prevent frames from being sent across the at least one of the label-switched tunnels, in order to eliminate a loop in the TLS.

41. (New) The device according to claim 36, wherein the traffic processor is adapted to send the control frames through the label-switched tunnels that are used for carrying user data in the TLS.

42. (New) The device according to claim 36, wherein the TLS is one of a plurality of transparent local-area network services (TLSs) operative in the communication network, and wherein the traffic processor is adapted to insert information in the control frames that identifies the TLS among the plurality of

TLSs, and to process the BPDU so as to eliminate the loops only from the TLS identified by the control frames.

43. (New) The device according to claim 42, wherein the information in the control frames that identifies the TLS comprises a channel label, which is pushed onto the control frames in addition to the control traffic label.

44. (New) The device according to 42, wherein the information in the control frames that identifies the TLS is added to the control traffic label.

45. (New) A communication network, comprising a plurality of label-switched routers (LSRs) arranged to define a transparent local area network service (TLS), which comprises a system of label-switched tunnels between the label-switched routers (LSRs) through the communication network, the TLS having at least first and second endpoints to which first and second user equipment is connected so that the TLS acts as a virtual bridge between the first and second user equipment,

wherein each of the LSRs comprises:

one or more ports, adapted to send and receive traffic via the label-switched tunnels; and

a traffic processor which is coupled to the one or more ports, and is adapted to transmit control frames to the LSRs in the TLS via the label-switched tunnels, each control frame comprising a control traffic label and a bridge protocol data unit (BPDU) in accordance with a spanning tree protocol (STP), the control traffic label indicating to the LSRs that the STP is to be executed by the LSRs without transmission of the BPDU to the user equipment, wherein the traffic processor is further adapted, upon receiving the control frames, to process the BPDU, responsively to the control traffic label, so as to remove loops in a topology of the TLS irrespective of the user equipment..